
QPC841 Quad Serial Data Interface Card

The QPC841 Quad Serial Data Interface (QSDI) Card provides four RS-232-C serial ports between the Meridian 1 system and external devices. The QSDI card plugs into a slot in the common equipment area of any Meridian 1 system.

The Quad Serial Data Interface Card is normally used to connect the Meridian 1 system to its administration and maintenance terminal. It is also used to connect the system to a background terminal (used in the Hotel/Motel environment), a modem, or the Automatic Call Distribution (ACD) and Call Detail Recording (CDR) features.

The QSDI Card is compatible with all existing system software. It does not support 20 mA current loop interface.

QSDI cards are housed in the following modules:

- NT5D21 Core/Network Module (slots 0 through 7) for system options 51C, 61C, and 81C
- NT6D39 CPU/Network Module (slots 1 through 9, and 13) for system options 51 and 61
- NT6D60 Core Module (slots 0 through 5) for system option 81
- NT8D11 Common /Peripheral Equipment (CE/PE) Module (“NET” slots 4 through 9) for system options 21, 21A, and 21E
- NT8D34 CPU Module (slots 6 and 13) for system option 71
- NT8D35 Network Module (slots 5 through 13) in active network groups for system options 71 and 81
- NT9D11 Core/Network Module (slots 0 through 8) for system option 61C

Note: When a QSDI card is installed in an NT6D60 Core Module, an NT8D34 CPU Module, or slot 13 of an NT6D39 CPU/Network Module in a dual-CPU system, any input/output (I/O) device connected to the card does not function when the CPU in that module is inactive.

Physical description

The QPC841 QSDI Card (see [Figure 8](#)) is a printed circuit board measuring 31.75 cm by 25.4 cm (12.5 in. by 10 in.). The front panel is 2.54 cm (1 in.) thick.

Up to four QSDI boards can be used in a system, allowing a total of sixteen asynchronous serial ports. The four serial ports on each card are addressed as two pairs of consecutive addresses (0 and 1, 2 and 3, and so on to 14 and 15). The pairs need not be consecutive. For example: pairs 0 and 1, and 4 and 5 could be used.

The card front panel has two connectors, J1 and J2. Connector J1 is used for port 1 while connector J2 is used for ports 2, 3, and 4. It also has an enable/disable (ENB/DIS) switch and a red light-emitting diode (LED). The LED indicates that the card has been disabled. It is lit when

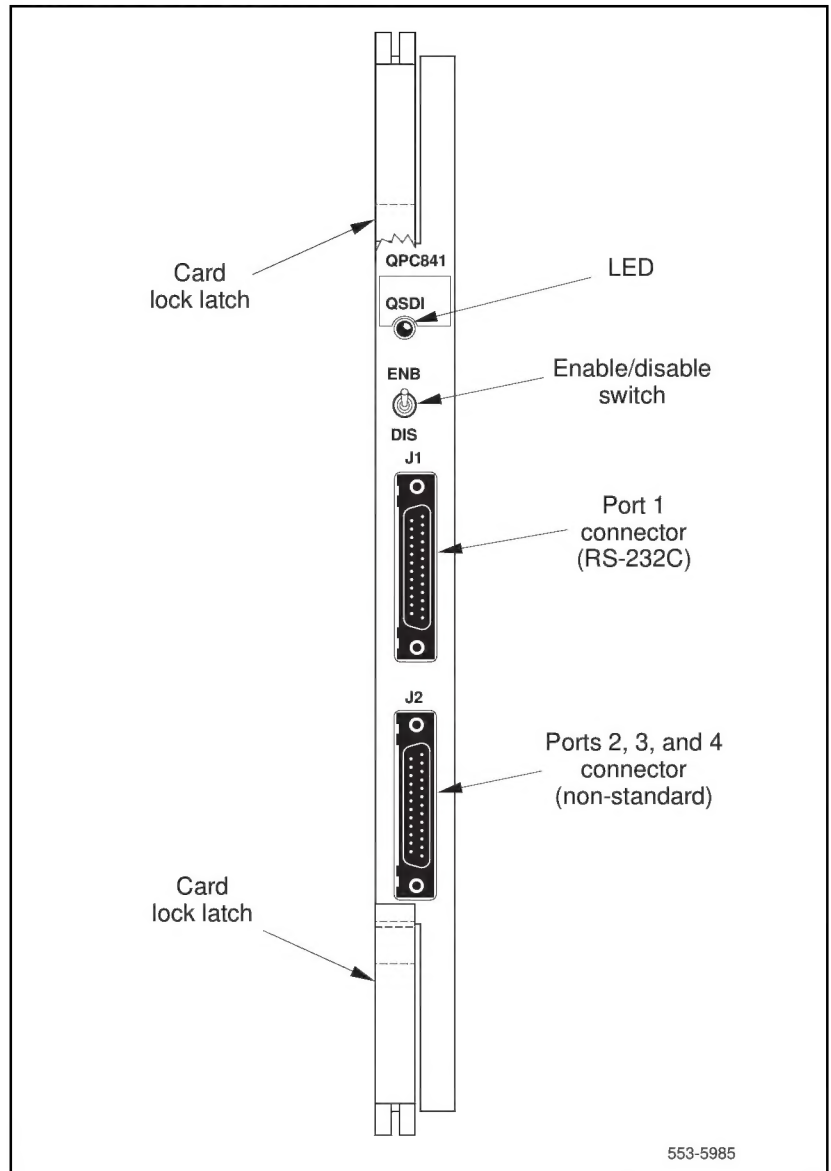
- the ENB/DIS switch is set to DIS
- all of the ports on the card are disabled in software
- none of the card ports are configured in software

Functional description

The QPC841 Quad Serial Data Interface Card contains all of the logic for four asynchronous serial ports, including the baud rate generators. These serial ports are directly accessed by the system processor using memory reads and writes.

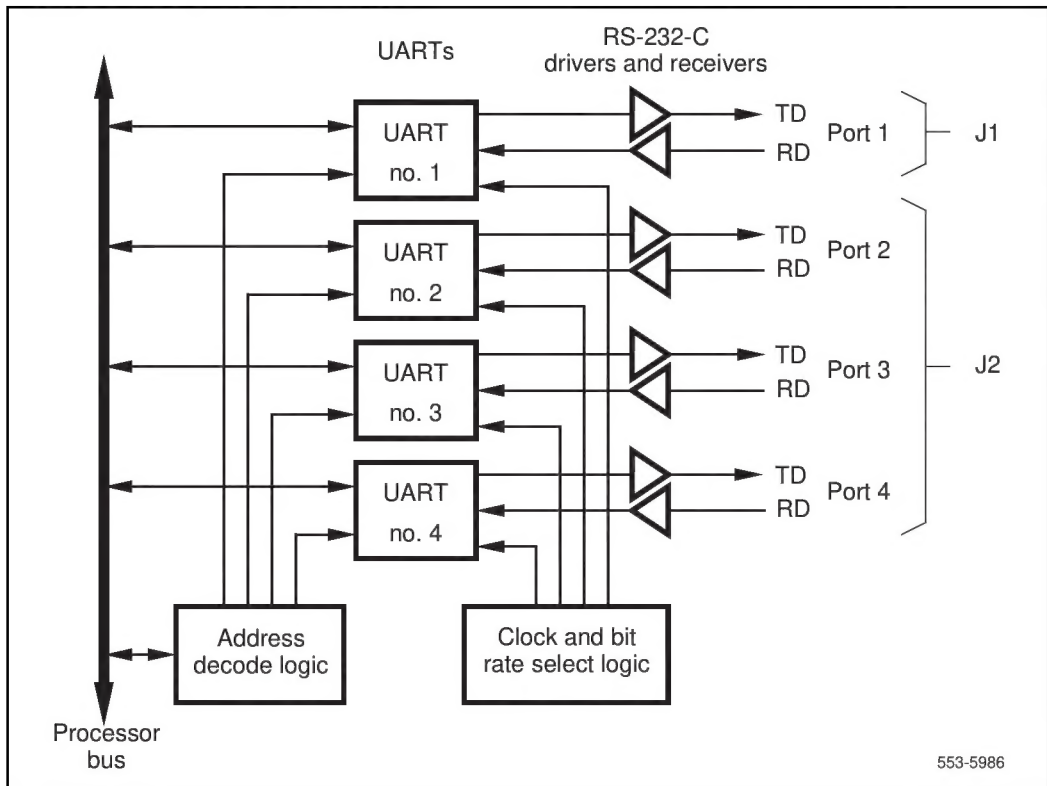
The QPC841 Quad Serial Data Interface Card ([Figure 9](#)) contains four universal asynchronous receiver/transmitters (UARTs) and the logic necessary to connect the UARTs to the system processor bus. The other logic on the card consists of four baud rate generators, four RS-232-C driver/receiver pairs, and the jumpers and logic needed to configure the UARTs.

Figure 8
QPC841 QSDI Card front panel



The address select switches and logic on the card always address the UARTs using two pairs of addresses: 0 and 1, and 2 and 3 through 15 and 16. The pairs need not be consecutive. Other switches on the board determine the baud rate for each individual port and whether the port is configured to talk to a terminal (DTE equipment) or a modem (DCE equipment). Instructions for setting the jumpers are given later in this section.

Figure 9
QPC841 QSDI Card block diagram



Connector pin assignments

Connector J1 is connected to port one, and uses the RS-232-C standard DB-25 pinout. Connector J2 is connected to ports two, three, and four, and is a non-standard pinout that requires an adapter cable. An adapter cable (NT8D96) splits the J2 signals out to three standard RS-232-C connectors. Port 2 is connected to connector A, port 3 is connected to connector B, and port 4 is connected to connector C.

[Table 14](#) shows the pinouts for connector J1, and [Table 15](#) shows the pinouts for connector J2.

Table 14
Connector J1 pin assignments

Pin number	Signal	Purpose in DTE mode	Purpose in DCE mode
1	FGD	Frame ground	Frame ground
2	TD	Received data	Transmitted data
3	RD	Transmitted data	Received data
4	RTS	Request to send (not used)	Request to send (Note 2)
5	CTS	Clear to send (Note 1)	Clear to send
6	DSR	Data set ready (Note 1)	Data set ready
7	GND	Ground	Ground
8	CD	Carrier detect (Note 1)	Carrier detect (not used)
20	DTR	Data terminal ready	Data terminal ready (Note 2)
Note 1: In DTE mode, the signals CD, DSR, and CTS are tied to +12 volts (through a resistor) to indicate that the QSDI port is always ready to transmit and receive data. Note 2: In DCE mode, the signals DTR, and RTS are tied to +12 volts (through a resistor) to indicate that the QSDI port is always ready to transmit and receive data.			

Table 15
Connector J2 pin assignments

Pin Number	Port	Signal	Purpose in DTE mode	Purpose in DCE mode
1	2	FGD	Frame ground	Frame ground
2		TD	Transmitted data	Transmitted data
3		RD	Received data	Received data
4		RTS	Request to send (not used)	Request to send (Note 2)
5		CTS	Clear to send (Note 1)	Clear to send
6		DSR	Data set ready (Note 1)	Data set ready
7		GND	Ground	Ground
8		CD	Carrier detect (Note 1)	Carrier detect (not Used)
20		DTR	Data terminal ready	Data terminal ready (Note 2))
9	3	TD	Transmitted data	Transmitted data
10		RD	Received data	Received data
11		RTS	Request to send (not used)	Request to send (Note 2))
12		CTS	Clear to send (Note 1)	Clear to send
13		DSR	Data set ready (Note 1)	Data set ready
25		GND	Ground	Ground
24		CD	Carrier detect (Note 1)	Carrier detect (not used)
23		DTR	Data terminal ready	Data terminal ready (Note 2))
14	4	TD	Transmitted data	Transmitted data
15		RD	Received data	Received data
16		RTS	Request to send (not used)	Request to send (Note 2))
17		CTS	Clear to send (Note 1)	Clear to send
18		DSR	Data set ready (Note 1)	Data set ready
19		GND	Ground	Ground
21		CD	Carrier detect (Note 1)	Carrier detect (not used)
22		DTR	Data terminal ready	Data terminal ready (Note 2))
Note 1: In DTE mode, the signals CD, DSR, and CTS are tied to +12 volts (through a resistor) to indicate that the QSDI port is always ready to transmit and receive data.				
Note 2: In DCE mode, the signals DTR and RTS are tied to +12 volts (through a resistor) to indicate that the QSDI port is always ready to transmit and receive data.				

Configuring the QSDI card

Configuring the QSDI card to work in a Meridian 1 system consists of setting these option switches for each serial port:

- Port address
- Baud rate
- DTE/DCE mode

Figure 10 on page 44 shows the location of the option switches on the QSDI card. Instructions for setting these switches are in the section that follows.

Address switch settings

Table 16 lists the address switch settings for the QPC841 Quad Serial Data Interface Card. The address select jumpers and logic on the card address the UARTs using two pairs of addresses: 0 and 1, 2 and 3, through 15 and 16. The pairs need not be consecutive. Switch SW14 is used to select the addresses for ports 1 and 2. Switch SW15 is used to select the addresses for ports 3 and 4.

Table 16
QSDI card address switch settings

SW14	Port 1	Port 2	Switch settings							
SW15	Port 3	Port 4	1	2	3	4	5	6	7	8
Device pair addresses	0	1	off	off	off	off	off	on	on	on
	2	3	off	off	off	off	off	on	on	off
	4	5	off	off	off	off	off	on	off	on
	6	7	off	off	off	off	off	on	off	off
	8	9	off	off	off	off	off	off	on	on
	10	11	off	off	off	off	off	off	on	off
	12	13	off	off	off	off	off	off	off	on
	14	15	off	off	off	off	off	off	off	off
Note 1: On SW16, positions 1, 2, 3, and 4 must be OFF. Note 2: To avoid address conflicts, SW14 and SW15 can never have identical settings. Note 3: To disable ports 1 and 2, set SW14 position 1 to ON. To disable ports 3 and 4, set SW15 position 1 to ON.										

Baud rate switch settings

[Table 17](#) lists the switch settings necessary to set the baud rate.

Table 17
QSDI card baud rate switch settings

Baud rate	Port 1—SW10				Port 2—SW11				Port 3—SW12				Port 4—SW13			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
150	off	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on
300	off	on	off	on	off	on	off	on	off	on	off	on	off	on	off	on
600	off	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on
1200	off	on	on	off	off	on	on	off	off	on	on	off	off	on	on	off
2400	off	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off
4800	off	on	off	off	off	on	off	off	off	on	off	off	off	on	off	off
9600	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off	off

DTE/DCE mode switch settings

Table 18 shows the DTE/DCE mode selection switches for the four serial ports.

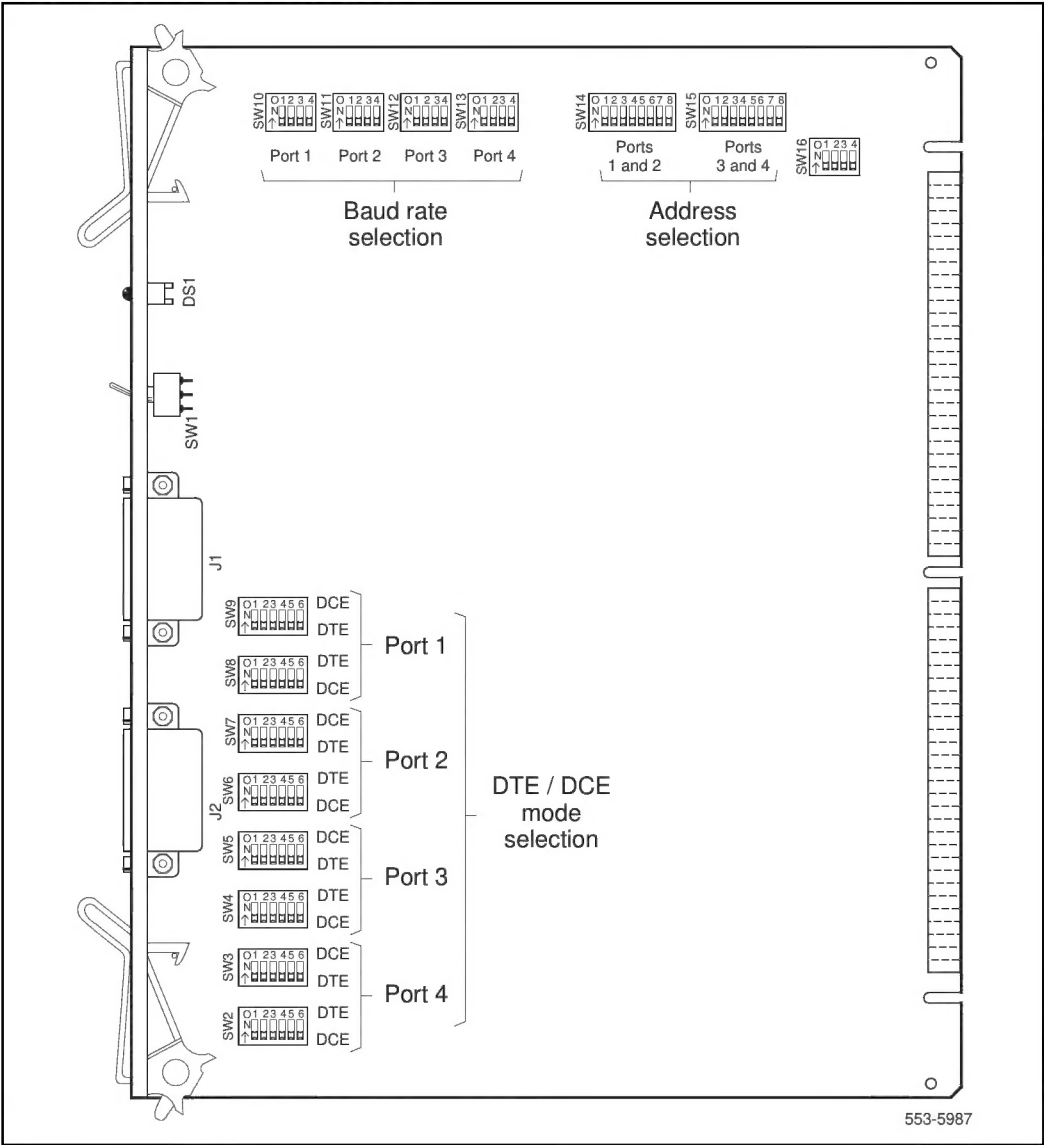
Table 18
QSDI card DTE/DCE mode switch settings

Mode	Port 1—SW8						Port1—SW9					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (Terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (Modem)	off	off	off	off	off	off	on	on	on	on	on	on
	Port 2—SW6						Port 2—SW7					
	on	on	on	on	on	on	off	off	off	off	off	off
DTE (Terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (Modem)	off	off	off	off	off	off	on	on	on	on	on	on
	Port 3—SW4						Port 3—SW5					
	on	on	on	on	on	on	off	off	off	off	off	off
DTE (Terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (Modem)	off	off	off	off	off	off	on	on	on	on	on	on
	Port 4—SW2						Port 4—SW3					
	on	on	on	on	on	on	off	off	off	off	off	off
DTE (Terminal)	on	on	on	on	on	on	off	off	off	off	off	off
DCE (Modem)	off	off	off	off	off	off	on	on	on	on	on	on

Test switch setting

Switch SW16 is only used for factory testing; all of its switches must be set to OFF for proper operation.

Figure 10
QSDI card option switch locations



Software service changes

Once the QPC841 QSDI card has been installed in the system, the system software needs to be configured to recognize it. This is done using the Configuration Record program (LD 17). Instructions for running the Configuration Record program are found in the *X11 input/output guide*.

Some of the prompts that are commonly used when running the Configuration Record program (LD 17) are shown in [Table 19](#). These parameters must be set for each port that is being used.

Table 19
Serial port configuration parameters

Prompt	Response	Description
REQ	CHG	Change configuration.
TYPE	CFN	Configuration type.
IOTB	YES	Change input/output devices.
ADAN	NEW TTY x New PRT x	Define a new system terminal (printer) port as device x, where x = 0 to 15.
CDNO	1–16	Use the QSDI card number to keep track of all ports.
DENS	DDEN	Double density SDI paddle board.
USER	xxx	Enter the user of port x. The values that can be entered depend on the software being used. See the <i>X11 input/output guide</i> for details.
XSM	Yes, (No)	Port is used for the system monitor.

Applications

The QPD841 Quad Serial Data Interface (QSDI) card is used to connect the Meridian 1 switch to a variety of communications devices and peripherals. Any RS-232-C compatible device can be connected to any of the four serial ports.

The standard application for the QSDI card is to connect the Meridian 1 switch to the system console. This can be either a direct connection if the console is located near the switch, or through a modem for remote maintenance.

Bell 103/212 compatible dumb modems are recommended to connect a remote data terminal. If a smart modem (such as a Hayes modem) is used, select the dumb mode of operation (Command Recognition OFF, Command Echo OFF) before connecting the modem to the asynchronous port.

Serial data interface connector J1 is a standard RS-232-C DB-25 connector that connects port 1 of the QSDI card to outside peripherals. Connector J2 is non-standard in that it contains the connections for the three remaining serial ports (ports 2, 3, and 4), on a single DB-25 connector. An adapter cable must be used to connect to standard RS-232-C peripherals. Cables that are applicable to the QSDI card are

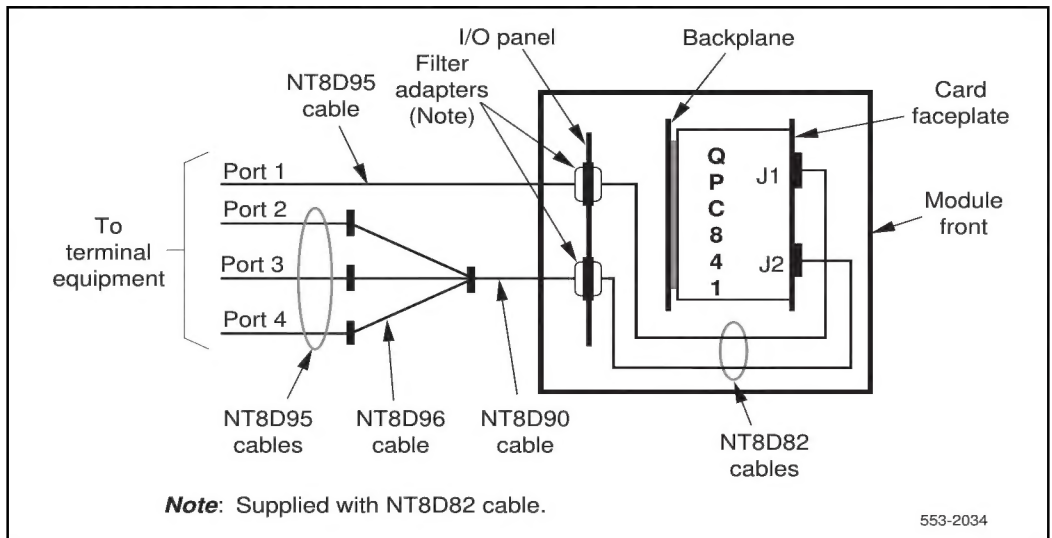
- SDI male-to-female flat cables (internal module use only)
 - NT8D82
 - QCAD290¹
 - QCAD42
- SDI male-to-male round cables (external use only)
 - NT8D95
- SDI to I/O cables (system options use only)
 - NT8D82¹

1. This cable is available in several different lengths. Refer to the *Meridian 1 equipment identification* (553-3001-154) for more information.

- SDI multiple-port cable (internal system options use only)
 - NT8D90
- SDI I/O to DTE/DCE cables (system options use only)
 - NT8D95¹
- SID Multiple-port cable (system options use only)
 - NT8D96

Figure 11 shows the QPC841 card and the cables listed above in a standard configuration:

Figure 11
QPC841 QSDI Card cabling



1. This cable is available in several different lengths. Refer to the *Meridian 1 equipment identification* (553-3001-154) for more information.

